

CLAIMS

I claim:

- 5 1. A conveyor belt scale system, comprising:
- a conveyor having a support frame and an endless belt rotatably supported about said support frame;
- an upper roller supporting an upper portion of said endless belt after a material deposit location upon said endless belt;
- 10 a first load cell mechanically connected to said upper roller for measuring a gross full weight at a plurality of positions upon an upper portion of said endless belt supporting material deposited;
- a lower roller support a lower portion of said endless belt after said material is removed from said endless belt;
- 15 a second load cell mechanically connected to said lower roller for measuring a gross empty weight at said plurality of positions upon a lower portion of said endless belt;
- a velocity sensor measuring a velocity of said endless belt; and
- a control unit in communication with said load cells and said velocity sensor for
- 20 receiving a gross empty weight and a gross full weight of a specific position upon said endless belt for calculating a net weight of material transported upon said conveyor.

2. The conveyor belt scale system of Claim 1, including:
- 25 a first member attached to said support frame;
- a second member attached to said support frame;
- a plurality of support members pivotally attached to said first member and extending beneath said second member;

a cross member attached to said plurality of support members and rotatably supporting said upper roller; and

a lower member attached to distal portions of said plurality of support members, wherein said first load cell is connected between said lower member and a
5 lower surface of said second member.

3. The conveyor belt scale system of Claim 2, wherein said first load cell is comprised of a tension load cell.

4. The conveyor belt scale system of Claim 3, including a plurality of cutouts within said support frame for movably receiving distal portions of said cross member.

5. The conveyor belt scale system of Claim 4, wherein said upper roller is comprised of a middle roller and a pair of side rollers extending outwardly and upwardly.

6. The conveyor belt scale system of Claim 5, wherein said upper roller is positioned at least three feet after a deposit location of said material upon said endless belt.

7. The conveyor belt scale system of Claim 1, wherein said second load cell is comprised of:

a pair of side load cells attached to said support frame; and

a pair of brackets attached to said side load cells extending downwardly and rotatably supporting said lower roller.

5 8. The conveyor belt scale system of Claim 7, wherein said side load cells are comprised of a compression load cell structure.

10 9. The conveyor belt scale system of Claim 1, including a display for displaying said net weight.

15 10. The conveyor belt scale system of Claim 1, wherein said lower roller is positioned near a transition location of said endless belt from said lower portion to said upper portion.

20 11. A conveyor belt scale system, comprising:
a conveyor having a support frame and an endless belt rotatably supported about said support frame;

an upper roller supporting an upper portion of said endless belt after a material deposit location upon said endless belt;

25 a first load cell mechanically connected to said upper roller for measuring a gross full weight at a plurality of positions upon an upper portion of said endless belt supporting material deposited;

a lower roller support a lower portion of said endless belt after said material is removed from said endless belt;

a second load cell mechanically connected to a second upper roller for measuring a gross empty weight at said plurality of positions upon said upper portion of said endless belt prior to a material deposit location;

a velocity sensor measuring a velocity of said endless belt; and

5 a control unit in communication with said load cells and said velocity sensor for receiving a gross empty weight and a gross full weight of a specific position upon said endless belt for calculating a net weight of material transported upon said conveyor.

10 12. The conveyor belt scale system of Claim 11, including:

a first member attached to said support frame;

a second member attached to said support frame;

a plurality of support members pivotally attached to said first member and extending beneath said second member;

15 a cross member attached to said plurality of support members and rotatably supporting said upper roller; and

a lower member attached to distal portions of said plurality of support members, wherein said first load cell is connected between said lower member and a lower surface of said second member.

20

13. The conveyor belt scale system of Claim 12, wherein said first load cell is comprised of a tension load cell.

25

14. The conveyor belt scale system of Claim 13, including a plurality of cutouts within said support frame for movably receiving distal portions of said cross member.

15. The conveyor belt scale system of Claim 14, wherein said upper roller is comprised of a middle roller and a pair of side rollers extending outwardly and upwardly.

5

16. The conveyor belt scale system of Claim 15, wherein said upper roller is positioned at least three feet after a deposit location of said material upon said endless belt.

10

17. The conveyor belt scale system of Claim 11, including:

a first member attached to said support frame;

a second member attached to said support frame;

a plurality of support members pivotally attached to said first member and extending beneath said second member;

a cross member attached to said plurality of support members and rotatably supporting said upper roller; and

a lower member attached to distal portions of said plurality of support members, wherein said second load cell is connected between said lower member and a lower surface of said second member.

15
20

18. The conveyor belt scale system of Claim 17, wherein said second load cell is comprised of a tension load cell.

25

19. The conveyor belt scale system of Claim 11, wherein said lower roller is positioned near and before said material deposit location upon said upper portion of said endless belt.

5 20. A method of calculating a material net weight upon a conveyor having an endless belt with a first measuring location and a second measuring location, said method comprising the steps of:

- 10 (a) measuring a velocity of said endless belt in a continuous manner;
- (b) measuring a gross empty weight of said endless belt at a position P1 at said first measuring location;
- (c) calculating when position P1 of said endless belt will be positioned upon said second measuring location based upon said velocity of said endless belt;
- 15 (d) repeating steps (a), (b) and (c) for another plurality of positions upon said endless belt;
- (e) measuring a gross full weight of said endless belt at position P1 at said second measuring location;
- (f) calculating a material net weight at position P1 by subtracting said gross empty weight from said gross full weight;
- 20 (g) repeating step (f) for remaining plurality of positions upon said endless belt; and
- (h) repeating steps (a) through (g).